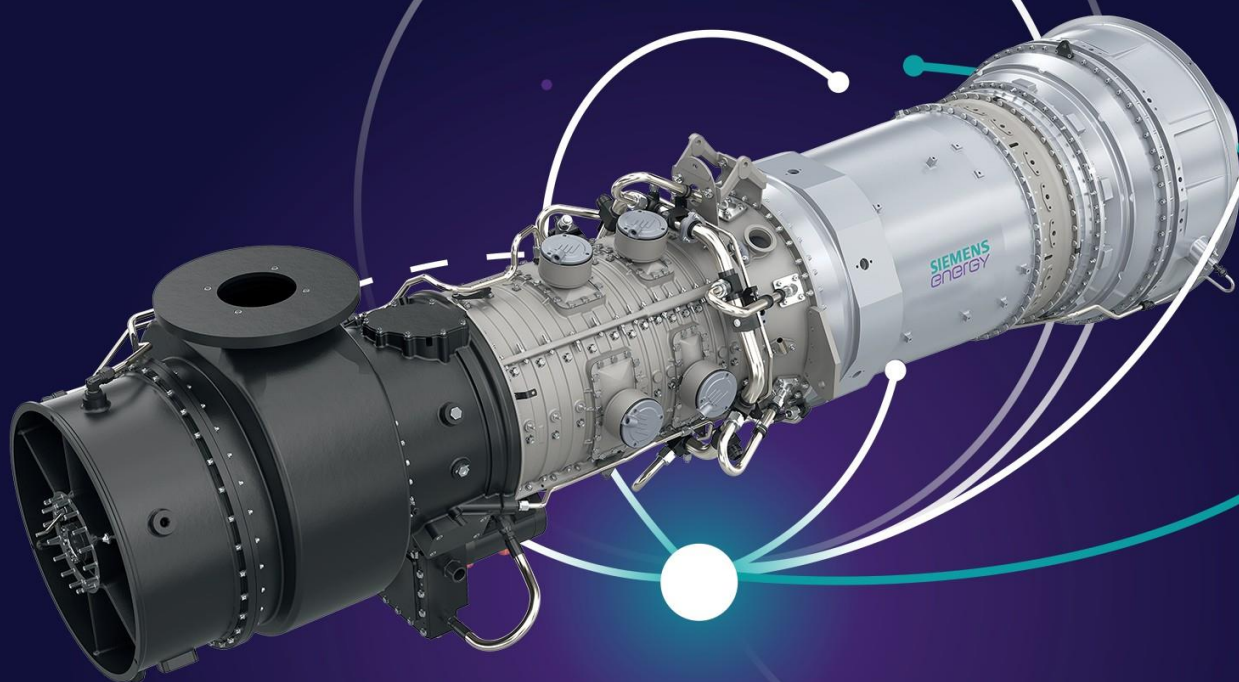


**SIEMENS**  
energy

# SGT-A05

Aeroderivative Gas Turbine



# SGT-A05 Aero derivative Gas Turbine

Easily deployable for dependable, efficient and flexible power for CHP, standby and mobile power applications

More than 1,720 SGT-A05 gas turbines have been sold for industrial use to more than 500 customers in 55 countries, accumulating an impressive 133 million operating hours since its introduction in 1963.

Today, these engines are delivered to our customers through a network of distributors who incorporate the engine into complete generator sets, both stationary and mobile.

All Siemens Energy distributors are carefully chosen for their engineering and manufacturing capabilities and commitment to adhere to Siemens Energy standards for quality and delivery.

## Industrialized Aero derivative Gas Turbine

Originally developed for use in aviation, the SGT-A05 gas turbine variants are flexible, compact and lightweight designs that are ideally suited for decentralized power generation offering high efficiency and fast start-up capabilities.

Fast start-up and power flexibility means that the SGT-A05 gas turbine can quickly handle changes in power requirements, making it the perfect fit for decentralized power generation or emergency power deployment.

### SGT-A05 KB7HE Aero derivative gas turbine.

Designed for use in power generation and oil & gas applications, features of the SGT-A05 gas turbine include:

**Class Leading Performance**

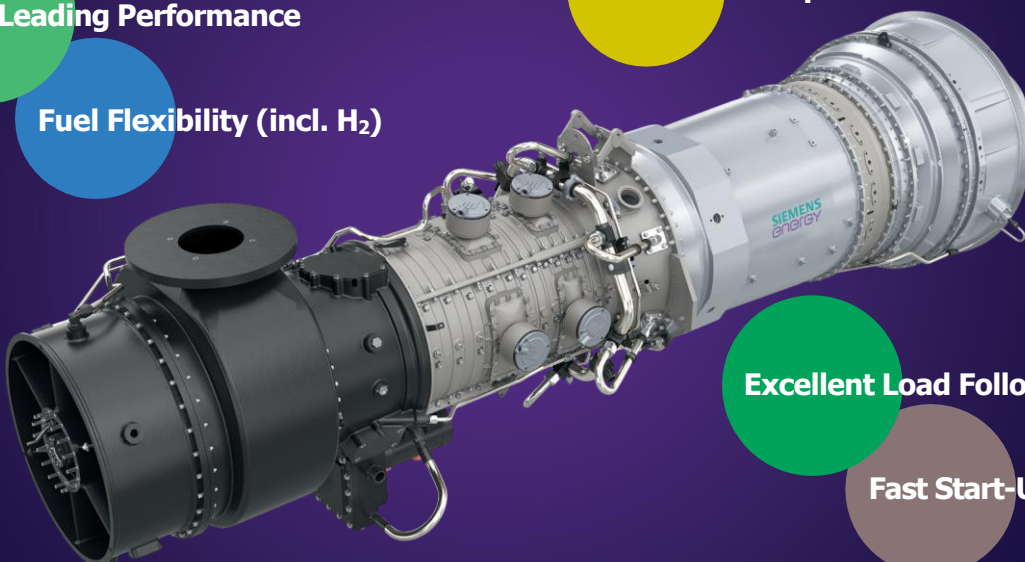
**Fuel Flexibility (incl. H<sub>2</sub>)**

**Start Reliability 99.8%**

**Emissions Compliant**

**Excellent Load Following**

**Fast Start-Up**



# Market Leading Performance

Continued investment and development in the SGT-A05 to meet the rapidly changing customer environment

At Siemens Energy we understand the rapidly changing nature of today's industrial and commercial environment, in which market requirements and operating conditions can vary significantly – and often unpredictably. So we design our products and services to help ensure Siemens Energy customers maintain performance and increase profitability throughout the life of their power generation project.

## SGT-A05 Aero derivative Gas Turbine variants

The SGT-A05 gas turbine variants produce electrical power output between 4 and 5.8 MW for applications such as base load, combined heat and power, mobile power and emergency power.

SGT-A05 variants are fulfilling the requirements of a wide spectrum of applications in terms of efficiency, reliability, flexibility and environmental compatibility.

SGT-A05 gas turbine variants offer low life-cycle costs and an excellent return on investment.

## Reducing exhaust emission for our customers and their communities

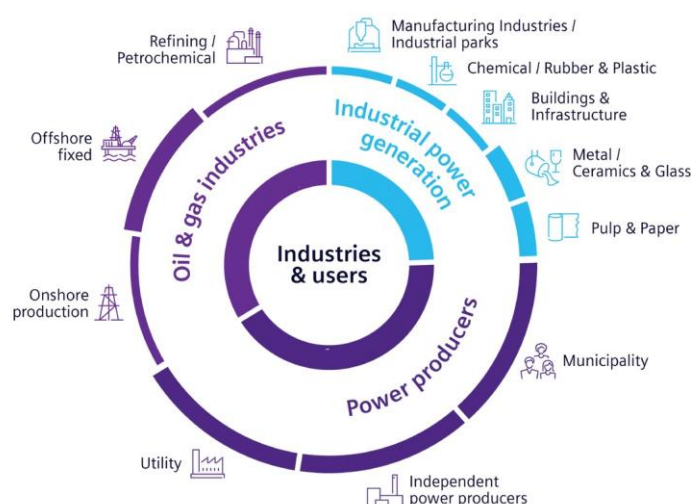
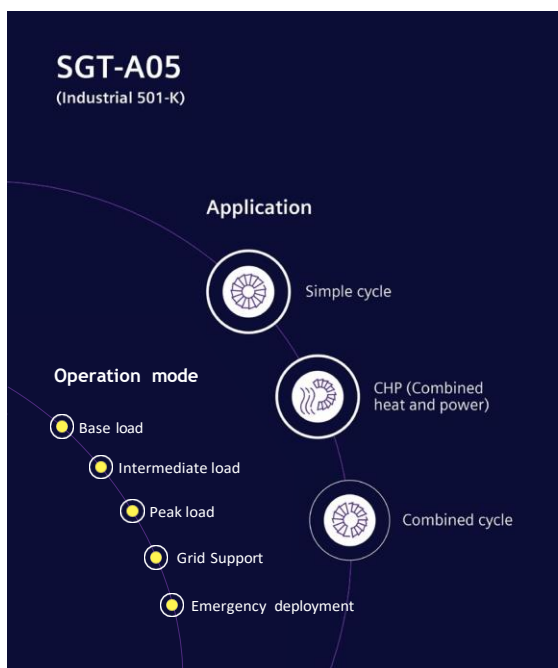
SGT-A05 is offered with either standard rich burn or advanced lean-burn combustion technology available with the Dry Low Emission (DLE) system.

The DLE system achieves emission levels better than 25 vppm NO<sub>x</sub> and 50 vppm CO. The DLE System has achieved single digit NO<sub>x</sub>.\*

50% turndown capability with emission compliance is available on the DLE system. Siemens Energy continues to invest in further enhancing the emission and turndown capabilities of the SGT-A05 gas turbine.

Water and steam injection diluent options are available for emissions reduction with standard rich burn combustion configurations.

*\*Emission performance based on package configuration and fuel quality.*



# Decarbonization @ Siemens Energy

Currently, SGT-A05 is capable of operating on 30% vol. hydrogen with minimal hardware changes on DLE and WLE systems.



*"In answering the question of how we can meet the world's growing energy needs while protecting the climate, hydrogen will be an important lever. It allows to decarbonize different sectors and to transport or store renewable energy. At Siemens Energy, we will continue to drive the development of a hydrogen economy."*

Christian Bruch, CEO Siemens Energy

The world is hungry for energy, and climate change calls for lower emissions. Our customers need innovative solutions to succeed as carbon neutrality will drive significant changes in the market. We have a solution to navigate these changes.

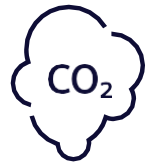
Gas turbines remain an important element in the power generation as electrification trends toward full decarbonization and the hydrogen economy start to unfold. SGT-A05 gas turbines can run on a wide range of fossil fuels today as we prepare to run on carbon-neutral fuels when needed. Please contact us to find out how.

Reliability, availability, and grid stability will continue to be important features in an energy environment with increased penetration of renewable energy. The fast-starting feature of the SGT-A05 gas turbines, combined with carbon neutral fuels, makes this equipment the ideal future-proof investment for projects such as data centers, peaking and baseload units. The SGT-A05 will be capable of handling the hydrogen blended into existing natural gas infrastructure or run as a standalone fuel.

Carbon neutral fuels are one of the most important future technologies to reduce greenhouse gases and drive climate change, especially in industrial applications. The SGT-A05 gas turbine technology enables our customers to supply energy sustainably, reliably, and economically.

## Decarbonization impact

- Reduction in CO<sub>2</sub> footprint with carbon neutral fuels, such as hydrogen
- Utilization of hydrogen from industry by-product (e.g., petrochemical)



## More customer benefits

- Upgrading Siemens Energy gas turbines to carbon neutral fuel capability protects existing assets and future investments for a fully decarbonized world
- Low NO<sub>x</sub> emissions through DLE or WLE technology (dry/wet low emission)



## Decarbonizing energy one step at a time

The SGT-A05 operational and fuel flexibility enables the transition to reliable and environmentally sustainable energy. Therefore, owners of existing and new SGT-A05 gas turbine power plants can be confident of their plants' roles in supporting the future energy transition.

Applicable for baseload, back-up and combined heat and power generation, the SGT-A05 Hydrogen conversions will feature:

- Minimal hardware changes at lower H<sub>2</sub> blends
- Significant CO<sub>2</sub> reductions at higher H<sub>2</sub> blends
- No power derate all the way up to 100% H<sub>2</sub>.

**No power reduction,  
even at 100% H<sub>2</sub>.**

# SGT-A05 Gas Turbine Variants

Now even stronger with SGT-A05 KB7HE

Based on proven aeroderivative design, the SGT-A05 gas turbines are flexible, compact and lightweight designs that are ideally suited for decentralized power generation offering high efficiency and fast start-up capabilities. Our current offering includes variants of the proven KB5 and KB7 engines:

SGT-A05 **KB7HE**, SGT-A05 **KB7S** and SGT-A05 **KB5S**

### Fuel Flexibility

The SGT-A05 is known for its high fuel flexibility, which will accommodate a wide variety of possible applications and requirements.

Fuels include, but are not limited to natural gas, liquid fuels (e.g. diesel and ethanol) and low energy gas fuels.

Fuel system options include DLE, dual fuel, and water injection.

### Fast Start-up

Thanks to advanced engineering, the SGT-A05 gas turbines provide fast start-up capability: You will have full engine power available within 60 seconds in all conditions. This includes hot restarts, with no need to go into idle condition. The SGT-A05 engine also offers black start capability.

### Excellent Load Following

Emissions control available down to below 50% power. Our non-DLE variant can adjust to any power that is required for the site. All our gas turbines easily accept instantaneous increases / decreases in power output, making this the perfect solution for Island mode operations.

## SGT-A05 gas turbine variants specification

### Simple cycle power generation

	SGT-A05 KB5S	SGT-A05 KB7S	SGT-A05 KB7HE
Power Output*	4.0 MW(e)	5.4 MW(e)	5.8 MW(e)
Fuel	Natural gas, liquid fuel, dual fuel; other fuels on request; automatic changeover from primary to secondary fuel at any load		
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Electrical Efficiency*	29.7%	32.3%	33.2%
Heat Rate*	12,137 kJ/kWh	11,146 kJ/kWh	10,889 kJ/kWh
Turbine Speed	14,200 rpm	14,600 rpm	14,600 rpm
Pressure Ratio	10.3 : 1	14.2 : 1	14.4 : 1
Exhaust mass flow	15.4 kg/s	21.3 kg/s	21.4 kg/s
Exhaust Temperature	560 °C (1,040 °F)	495 °C (923 °F)	508 °C (946 °F)
NOx emissions	≤ 25 ppmvd at 15% O <sub>2</sub> on fuel gas (with DLE)		

\* Nominal uninstalled new engine performance with no inlet or exhaust ducting losses, ISO conditions, 0% relative humidity, gaseous fuel with lower heating value of 20,400 BTU/lb (47,496 kJ/kg). Assumes 98.5% generator efficiency and 60 kw shaft gearbox power loss. Power, efficiency and heat rate all based on electrical power output measured at generator terminals. Please see your local Siemens Energy distributor or Siemens Energy representative for specific performance and emissions for your particular project and site conditions.



## SGT-A05 Gas Turbine Variants

# SGT-A05 KB7HE

## Market Leading Gas Turbine

Taking advantage of the already proven and trusted SGT-A05 KB7S gas turbine, the SGT-A05 KB7HE provides performance enhancements using a High Efficiency Compressor upgrade. Based on the proven aeroderivative gas turbine technology, the SGT-A05 KB7HE is an outstanding solution for power generation applications.

Existing SGT-A05 KB7S can easily retrofit to SGT-A05 KB7HE as a cost competitive investment.

SGT-A05 KB7HE is the highest horsepower version (simple cycle) of the SGT-A05 series of engines.

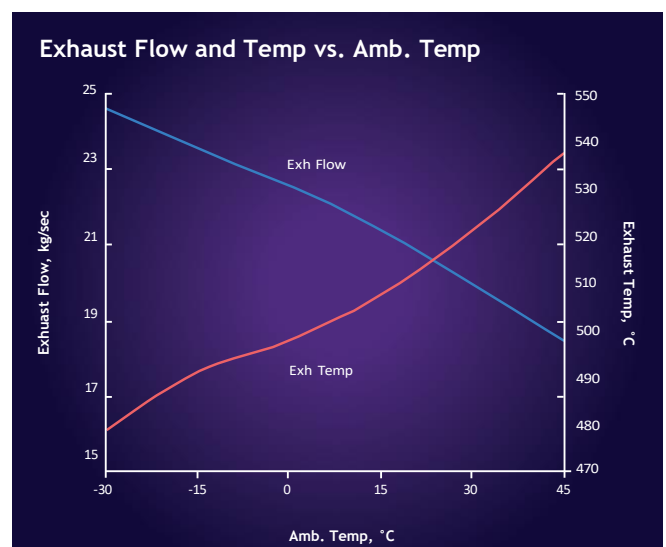
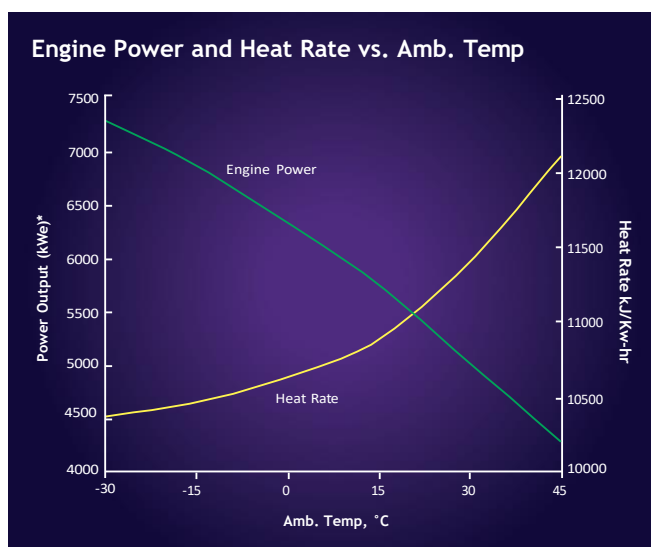
- Higher Power – 8% power increase (8000 SHP) at ISO conditions\*
- Lower Fuel Burn
- Fuel Flexibility – Same fuel options as current SGT-A05
- Proven non-DLE dual fuel configuration and combustion system
- Heat Rate – 2.3 % improvement.\*

\*Compared with SGT-A05 KB7S

The aeroderivative SGT-A05 KB7HE gas turbine has a best in class

# 33.2%

electrical efficiency



Measured at the generator terminals excluding package inlet and outlet losses but including gearbox and generator losses  
Fuel - typical North American natural gas

## SGT-A05 Gas Turbine Variants

**SGT-A05 KB7S**

A single stage boost compressor, improved vane cooling, higher strength turbine blades and many other enhancements have been incorporated for improved performance, durability and operating cost.

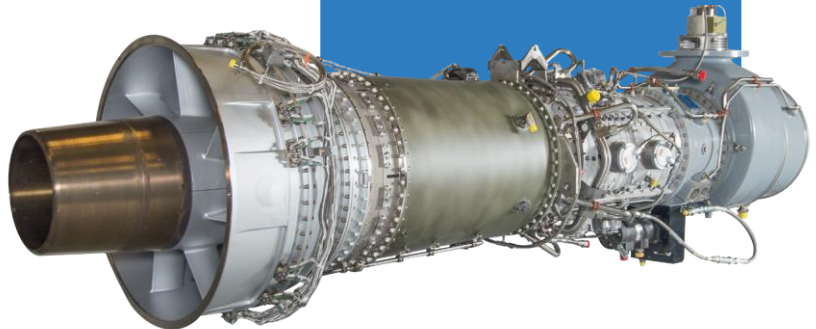
The aeroderivative design of the SGT-A05 series engine provides a lightweight, modular product that helps lower operating costs through reduced fuel consumption, extended hot section life and ease of maintenance.

- Effusion cooled combustion liners
- Core engine commonality with SGT-A05 family
- Addition of single stage compressor boost module
- Natural gas, mid-BTU gas options, liquid and dual fuel configurations
- 5 MW power class
- Competitive operating cost.

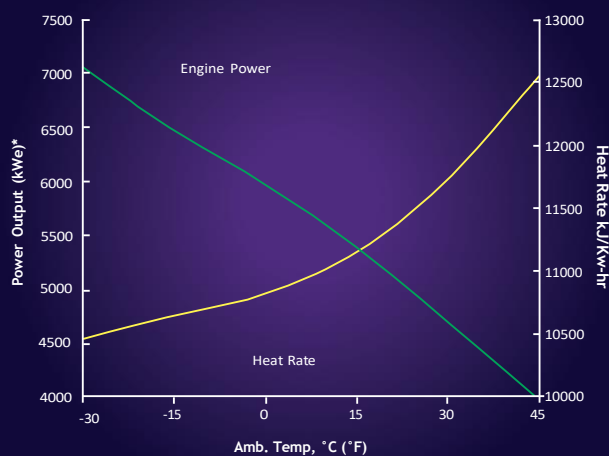
The aeroderivative SGT-A05 KB7S gas turbine has a best in class

# 32.3%

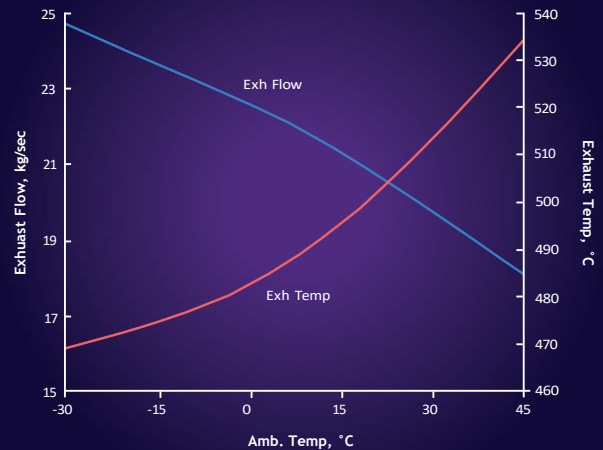
electrical efficiency



Engine Power and Heat Rate vs. Amb. Temp



Exhaust Flow and Temp vs. Amb. Temp



Measured at the generator terminals excluding package inlet and outlet losses but including gearbox and generator losses  
 Fuel - typical North American natural gas

## SGT-A05 Gas Turbine Variants

## SGT-A05 KB5S

The current engine design is the evolutionary result of continuous improvements since the first release in 1963.

Continued product enhancement has improved the reliability, performance, power, and efficiency of the SGT-A05 to better serve the needs of our customers.

Siemens Energy knows there is more to customer satisfaction than manufacturing a quality gas turbine engine. Beginning with the finest designs, the most advanced manufacturing techniques and rigid verification testing, our team continues to serve our customers with a global network of support.

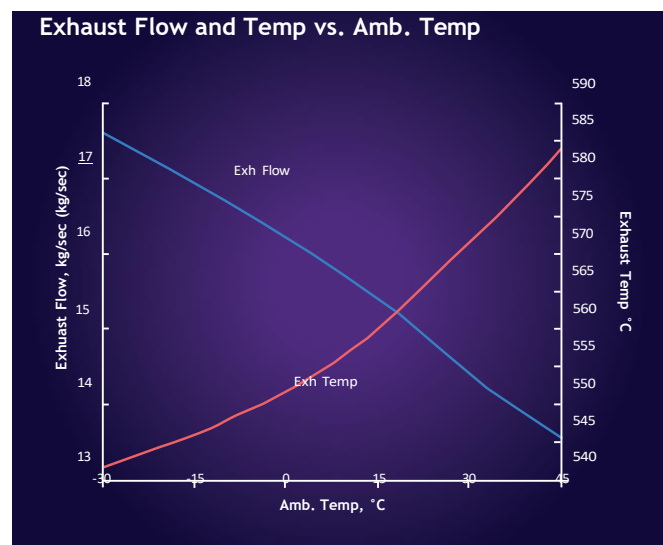
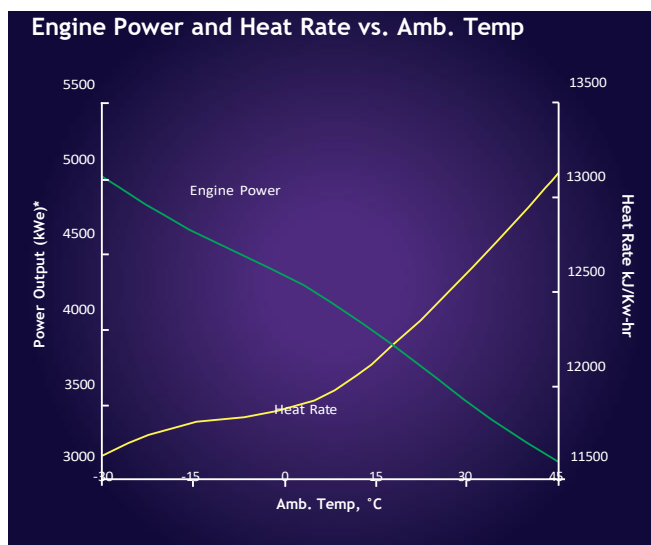
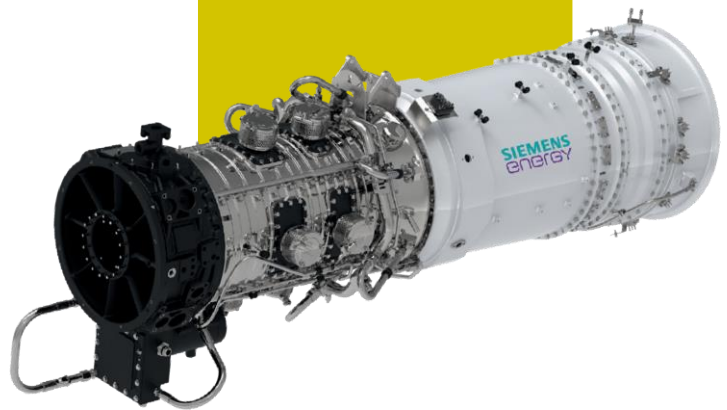
The SGT-A05 KB5S has accumulated millions of hours of operation since its introduction.

- Competitive operating cost
- 4 MW power class
- Single shaft cold end drive
- Standard effusion cooled combustion liners
- Core engine commonality with SGT-A05 family
- Natural gas, mid-BTU gas options, liquid and dual fuel configurations.

The aero derivative SGT-A05 KB5S engine has a best in class

**29.7%**

electrical efficiency



Measured at the generator terminals excluding package inlet and outlet losses but including gearbox and generator losses  
Fuel - typical North American natural gas



# Packaged for Success

Package features for dependable, efficient and flexible heat and power CHP, standby and mobile power applications.

The SGT-A05 packages are designed with noise suppression, access doorway, as well as safety interlocks supporting the health and safety of the operation and maintenance staff. The packages are compact and easily transported, installed and maintained.

## Lubricating Oil System

- Common synthetic lube oil system for both engine and package
- Lube system components are integral to package design incl. heaters and coolers to meet environmental needs.

## Fuel System

- On-skid fuel system includes all components needed to control fuel during start-up and operation
- Operates on natural gas, liquid, dual fuel, and low BTU gas with steam or water injection.

## Low Emissions

Both Dry Low Emissions (DLE) and Wet Low Emissions (WLE) systems are available for all SGT-A05 gas turbine variants.

## Baseplate

- Sturdy, but small, lightweight footprint
- Design allows easy access for maintenance
- Jib boom provides easy installation or removal of gas turbine.

## Electrical

Available to meet local standards as needed.

## Air Intake System

- Clean and uniform airflow to the gas turbine
- Includes filter assembly, silencer and flow direction geometry
- Filtration system is available to handle extreme environments.

## Gas Turbine Enclosure

- Acoustic enclosures meet a wide range of requirements and environments
- Enclosures shipped ready for installation and commissioning.

## Water Wash System

- Maintains performance by preventing build-up of contaminants in the engine compressor
- Pump or compressed air system includes storage tanks, pressure gauges, valves and piping.

Photo credit: Jereh Group



"All Siemens Energy distributors are carefully chosen for their engineering and manufacturing capabilities and commitment to adhere to Siemens Energy standards for quality and delivery."

# Complete Customer Care for the SGT-A05 Gas Turbine

## Customer support throughout the life of the engine

The global infrastructure of Siemens Energy and its distributors provides customers with the support they need at any time, anywhere in the world. Service centers in every region of the world, combined with a responsive spares program and expert field service representatives, all unite to provide a comprehensive system of service to keep our customers' equipment running reliably.

### Engine Lease

Engine lease programs are as varied as our customers' needs. Whether for routine maintenance, or in an emergency, engines can be made available to minimize disruptions to daily operations.

### Spares

A worldwide spares inventory allows parts to be delivered anywhere in the world, and as the Original Equipment Manufacturer (OEM), Siemens Energy together with our authorized service providers are committed to supplying only the highest quality parts, whether new or refurbished to in order to meet customer's requirements.

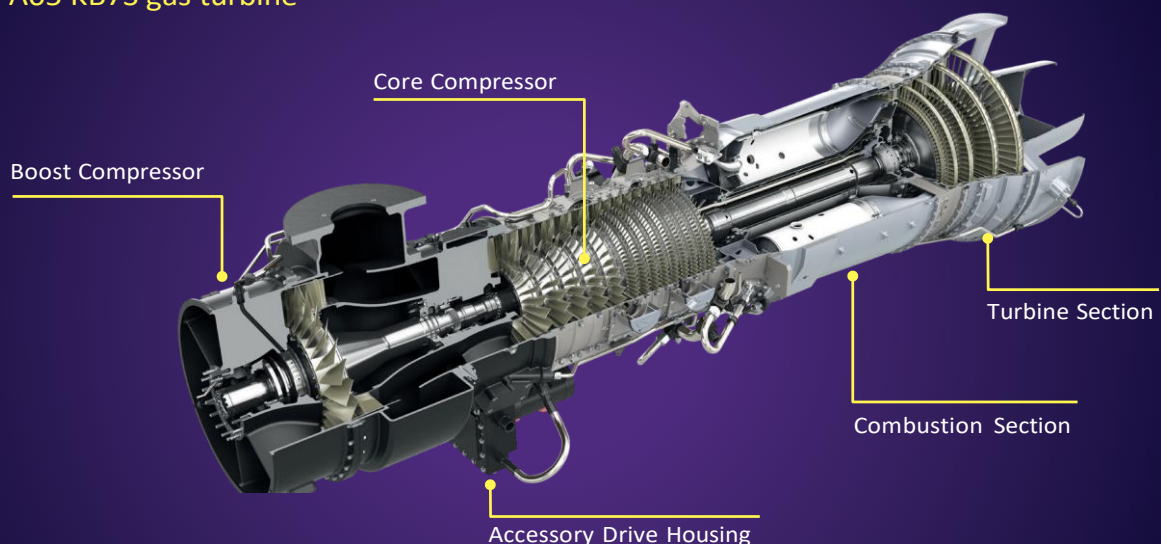
### Field Service

Twenty-four hours a day, seven days a week, expert field service engineers work to install, maintain and service customer equipment. Their high level of skill allows them to respond rapidly and effectively to a range of situations that may arise. They also provide training and equipment monitoring. Field service is provided by the distributor network or Siemens Energy.

### Modernizations and Upgrades

Upgrades to existing equipment are an attractive option for many customers, and a dedicated team of engineers and project managers work to ensure that the customer's equipment is providing the most power, efficiency and reliability possible. There are currently more than ten different upgrades available for the SGT-A05 gas turbine. Upgrades include SGT-A05 KB7HE upgrade, a conversion to Dry Low Emissions (DLE), dual fuel conversion and more.

SGT-A05 KB7S gas turbine



Distributed by:



401 East Jackson Street, Suite 2340  
Tampa, Florida 33602 USA  
Corp. Tel.: +1 (813) 920-3500  
Fax: (941) 220-6612  
Email: [Sales@CTGPowerSystems.com](mailto:Sales@CTGPowerSystems.com)  
Website: [www.CTGPowerSystems.com](http://www.CTGPowerSystems.com)

Published by

Siemens Energy, Inc.  
15375 Memorial Drive, Suite 700  
Houston, TX 77079 USA

Article no: OGSV-B40001-00-7600

For more information, please visit our website: [siemens-energy.com](http://siemens-energy.com)

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products.

The requested performance features are binding only when they are expressly agreed upon in the concluded contract. All product designations may be trademarks or product names of Siemens Energy Global GmbH & Co. KG or other companies whose use by third parties for their own purposes could violate the rights of the owners.

Siemens Energy is a trademark licensed by Siemens AG.